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32.	<i>M. pronator quadratus</i> ,	0·10 oz.
33.	<i>M. supinator radii brevis</i> ,	0·22 oz.
34.	<i>M. extensor ossis metacarpi pollicis</i> ,	0·25 oz.
35.	<i>M. extensor primi internodii pollicis</i> ,	} united,	0·05 oz.
	<i>M. extensor secundi internodii pollicis</i> ,		
36.	<i>M. indicator</i>,	. . . . .	0·05 oz.
	This muscle sends a tendon to the middle finger, as well as to the index.		
37.	<i>M. abductor pollicis</i>,	. . . . .	0·05 oz.
38.	<i>M. opponens pollicis</i>,	. . . . .	0·03 oz.
39.	<i>M. flexor pollicis brevis</i>,	. . . . .	0·11 oz.
40.	<i>M. adductor pollicis</i>,	. . . . .	0·03 oz.

The Rev. SAMUEL HAUGHTON, M.D., Fellow of Trinity College, Dublin, read the following paper:—

NOTES ON ANIMAL MECHANICS.

NO. VIII.—FURTHER COMPARISON OF THE HIP JOINT AND KNEE JOINT MUSCLES IN THE CERCOPITHECUS, CYNOCEPHALUS, AND MACACUS.

SINCE publishing in Notes I. and II. my earlier observations on the muscular mechanism of the hip joint in Man and some of the lesser Monkeys, I have made further observations on this subject, a summary of which seems to me worthy of being laid before the Academy.

loped, the member so characteristic of the human hand seems in the most elevated apes (the Orangs) to incline to a complete annihilation. These apes, therefore, have nothing in the organization of their hand which indicates a passage into the human form; and I insist in my memoir on the profound differences revealed by the study of the movements in hands formed to accomplish objects of a totally distinct order. A close examination of the muscles of the arm and shoulder in the pretended anthropomorphous apes confirms these results. Besides, it is especially in the ape in appearance the most like man—the Indian Orang—that the hand and foot present the most striking degradations. This paradox—this default in the parallelism in man and the large apes in the development of correlative organs, such as the brain and the hand—shows absolutely that other harmonies and other destinies are here in question.

“The facts upon which I insist permit me to affirm, with a conviction founded on a personal and attentive study of all at present known, that anatomy gives no grounds for the idea, so violently defended now-a-days, of a close relationship between man and ape. One may invoke in vain some ancient skulls, evident monstrosities, found by chance, such as that of Neanderthal—and here and there similar forms may now be found; they belong to idiots. One of these was discovered a few years ago by Dr. Binder, who, at the request of M. Macé, presented it to me. It is now in the collection belonging to the Museum. It will henceforth be counted among the elements of the great discussion on the nature of man which now agitates philosophers and troubles consciences; out of which discussion, some day, the divine majesty of man shall arise consecrated by combat, and ever henceforth be inviolable and triumphant.”

1. *Cercopithecus mona* ? (male).

From the dissection of a specimen of a male *Cercopithecus mona* I obtained the following results:—

Muscle.	Actual Weight. Grs.	Percentage.	
1. Psodiliacus,	385	9·5	
2. Adductores,	836	20·7	
3. Glutæus maximus,	209	5·1	
4. Glutæus medius,	407	10·1	
5. Glutæus minimus,	44	1·1	
		<hr/>	46·5
1. Biceps femoris,	561	13·9	
2. Semimembranosus, }	330	8·1	
3. Semitendinosus, }			
4. Gracilis,	198	4·9	
5. Sartorius,			
6. Quadriceps extensor femoris, .	1080	26·6	
	<hr/>	<hr/>	53·5
Totals,	4050 grs.	100·0	100·0

	Grs.
Weight of Monkey,	51,860
„ heart,	286
„ liver,	1650
„ brain,	946

	Percentage.
Proper muscles of hip joint,	46·5
Flexors of knee,	26·9
Extensors of knee,	26·6
	<hr/>
	100·0

On projecting the planes of motion of the hip joint muscles on the plane of the rim of the acetabulum, I obtained the following results:—measuring the azimuths of the moments from the plane of motion of the knee joint, which is the natural zero plane for the hip joint—

Muscle.	Azimuth.	Moment.
1. Psodiliacus,	20°	9·5
2. Adductores,	139	20·7
3. Glutæus maximus,	326	5·1
4. „ medius,	341	10·1
5. „ minimus,	351	1·1

If we refer these moments to the plane of motion of the knee joint, which is the plane of Flexion and Extension of the thigh upon the body, and to the plane of Adduction and Abduction, perpendicular to the former plane, we can readily construct the following Table of Component Moments:—

Component Moments of Hip Joint Muscles of Cercopithecus mona.

Muscle.	Flexion.	Extension.	Adduction.	Abduction.
1. Psoadiliacus,	8.93	..	3.25	..
2. Adductores, . . . . .	..	15.62	13.58	..
3. Glutæus maximus,	4.23	..	..	2.85
4. „ medius,	9.55	..	..	3.29
5. „ minimus,	1.08	..	..	0.17
Totals,	23.79	15.62	16.83	6.31

Subtracting the moments acting in opposite directions, we find—

	Percentage.
Total flexion,	8.17
Total adduction,	10.52

2. Cercopithecus callitrichus? (male).

From a fine specimen of this Monkey I obtained the following results:—

Muscle.	Actual Weight. Gra.	Percentage.
1. Psoadiliacus,	360	8.0
2. Pectinæus,	88	1.9
3. Obturator externus,	77	1.7
4. Adductores,	710	15.4
5. Quadratus femoris,	66	1.4
6. Obturator internus,	100	2.2
7. Glutæus maximus,	192	4.2
8. „ medius,	490	10.6
9. „ minimus,	60	1.3
		46.7
1. Biceps femoris,	649	14.1
2. Semimembranosus,	297	6.4
3. Semitendinosus,	176	3.8
4. Gracilis,	198	4.3
5. Sartorius,	33	0.7
6. Quadriceps extensor femoris,	1111	24.0
		53.3
Totals,	4607 grs.	100.0

	Percentage.
1. Proper muscles of hip joint,	46.7
2. Flexors of knee,	29.3
3. Extensors of knee,	24.0
	100.0

Referring the moments of the hip joint muscles to the plane of the brim of the acetabulum, I found—

Muscle.	Azimuth. Degs.	Moment Percentage.
1. Psoadiliacus,	20	8·0
2. Pectinæus,	94	1·9
3. Adductores,	137	15·4
4. Obturator externus,	149	1·7
5. Quadratus femoris,	180	1·4
6. Obturator internus,	230	2·2
7. Glutæus maximus,	326	4·2
8. „ medius,	341	10·6
9. „ minimus,	351	1·3
		<hr/> 46·7 <hr/>

If these moments be resolved, as before, along the directions of Flexion and Extension of the knee joint, and of abduction and adduction perpendicular to it, we find—

Muscle.	Flexion.	Extension.	Adduction.	Abduction.
1. Psoadiliacus,	7·52	..	2·73	—
2. Pectinæus, . . . . .	..	0·13	1·89	—
3. Adductores, . . . . .	..	11·24	10·50	—
4. Obturator externus, ..	..	1·46	0·87	—
5. Quadratus femoris, ..	..	1·40	..	—
6. Obturator internus, ..	..	1·41	..	1·68
7. Glutæus maximus, ..	3·48	..	..	2·35
8. „ medius,	10·02	..	..	3·45
9. „ minimus,	1·28	..	..	0·20
Totals,	22·30	15·64	15·99	7·68

Subtracting opposite moments, we find—

	Percentage.
1. Total flexion,	6·66
2. Total adduction,	8·31

3. *Cynocephalus porcarius* (Chacma).

From a specimen of this *Cynocephalus*, I obtained the following results and measurements:—

Muscle.	Actual Weight. Ozs. Av.	Percentage.
1. Psoadiliacus,	0·35	3·1
2. Pectinæus et Adductor brevis,	0·17	1·5
3. Obturator externus,	0·27	2·4
4. Adductor magnus et longus,	1·40	12·6
5. Quadratus femoris,	0·14	1·3
6. Obturator internus,	0·31	2·8
7. Glutæus maximus,	0·57	5·1
8. „ medius,	1·27	12·3
9. „ minimus,	0·22	2·0
		<hr/> 43·1
1. Biceps femoris,	1·40	12·6
2. Semimembranosus,	0·95	8·5
3. Semitendinosus,	0·48	4·2
4. Gracilis,	0·51	4·5
5. Sartorius,	0·28	2·6
6. Rectus femoris,	0·63	5·6
7. Vastus externus,	1·40	12·6
8. „ internus,	0·45	4·0
9. Cruræus,	0·25	2·3
		<hr/> 56·9
Totals,	11·05 oz.	<hr/> 100·0
Proper muscles of hip joint,		43·1
Flexors of knee,		32·4
Extensors of knee,		24·5
		<hr/> 100·0

Referring the moments, as before, to the plane of the rim of the acetabulum, I found—

Muscle. .	Azimuth. Degs.	Moment. Percentage.
1. Psoadiliacus,	28	3·1
2. Pectinæus et adductor brevis,	74	1·5
3. Adductor magnus et longus,	137	12·6
4. Obturator externus,	148	2·4
5. Quadratus femoris,	180	1·3
6. Obturator internus et Gemelli,	226	2·8
7. Glutæus maximus, &c.,	328	5·1
8. „ medius et pyr.,	347	12·3
9. „ minimus,	355	2·0
		<hr/> 43·1

Resolving these moments, as before, we obtain—

Muscle.	Flexion.	Extension.	Adduction.	Abduction.
1. Psodiliacus,	2·74	..	1·45	..
2. Pectinæus et Ad. brevis,	0·41	..	1·44	..
3. Obturator externus, ..	..	2·03	1·27	..
4. Add. mag. et long., ..	..	9·21	8·59	..
5. Quadratus femoris, ..	..	1·30	..	..
6. Obt. int. et Gemell., ..	..	1·94	..	2·01
7. Glut. max., &c.,	4·33	..	..	2·70
8. „ med. et pyriform.,	12·23	..	..	2·76
9. „ minimus,	1·99	..	..	0·17
Totals,	21·70	14·48	12·75	7·64

Subtracting opposite moments, we find—

	Percentage.
Total flexion,	7·22
Total adduction,	5·11

4. *Macacus nemestrinus*.

The following Tables are deduced from Note VII., on the Muscular Anatomy of the *Macacus nemestrinus* :—

Muscle.	Actual Weight. Ozs. Av.	Percentage.
1. Psodiliacus,	1·87	10·9
2. Pectinæus,	0·22	1·3
3. Adductor brevis,	0·37	2·1
4. „ magnus,	3·20	18·8
5. Obturator externus,	0·53	3·1
6. Adductor longus,	0·90	5·3
7. Quadratus femoris,	0·46	2·7
8. Obturator internus, &c.,	0·75	4·4
9. Glutæus maximus, &c.,	0·90	5·2
10. „ medius, &c.,	1·95	11·4
11. „ minimus, &c.,	0·37	2·1
		67·3
1. Biceps femoris,	1·10	6·8
2. Semimembranosus,	0·67	3·9
3. Semitendinosus,	0·61	3·5
4. Gracilis,	0·55	3·2
5. Sartorius,	0·32	1·8
6. Rectus femoris,	0·80	4·7
7. Vastus externus,	0·82	4·8
8. „ internus,	0·40	2·3
9. Cruræus,	0·30	1·7
		32·7
Totals,	17·09	100·0

	Percentage.
Proper muscles of hip joint,	67·3
Flexors of knee,	19·2
Extensors of knee,	13·5

Referring the moments of the hip joint muscles to the rim of the acetabulum, I found—

Muscle.	Azimuth. Degs.	Moment. Percentage.
1. Psoadiliacus,	26	10·9
2. Pectinæus,	55	1·3
3. Adductor brevis,	86	2·1
4. „ magnus,	132	18·8
5. Obturator externus,	132	3·1
6. Adductor longus,	157	5·3
7. Quadratus femoris,	180	2·7
8. Obturator internus et Gemelli,	223	4·4
9. Glutæus maximus, &c.,	335	5·2
10. „ medius, &c.,	348	11·4
11. „ minimus,	356	2·1

Resolving these moments, as before, we obtain—

Muscle.	Flexion.	Extension.	Adduction.	Abduction.
1. Psoadiliacus,	9·77	..	4·78	..
2. Pectinæus,	0·74	..	1·06	..
3. Adductor brevis,	0·14	..	2·09	..
4. „ magnus, . . . . .	..	12·58	13·97	..
5. Obturator externus, . . . . .	..	2·07	2·30	..
6. Adductor longus, . . . . .	..	4·88	2·07	..
7. Quadratus femoris, . . . . .	..	2·70	..	..
8. Obturator internus, . . . . .	..	3·22	..	3·00
9. Glutæus maximus,	4·71	..	..	2·76
10. „ medius,	11·15	..	..	2·37
11. „ minimus,	2·09	..	..	0·14
Totals,	28·60	25·45	26·27	8·27

Subtracting the opposite moments, we find—

	Percentage.
Total flexion,	3·15
Total adduction,	18·00

If we collect together the preceding results into one Table, having first reduced them to percentages of the proper muscles of the hip joint,

we shall obtain the following results, which represent the total flexion and adduction, expressed as percentages, compared with each other.

	Total Flexion.	Total Adduction.
1. <i>Cercopithecus mona</i> ,	17·57	22·62
2. „ <i>callitrichus</i> ,	14·26	17·79
3. <i>Cynocephalus porcarius</i> ,	16·75	11·85
4. <i>Macacus nemestrinus</i> ,	4·68	26·74

The relative proportions of the *Glutæi* muscles, in the smaller monkeys, I have found to be as follows:—

	Gl. max.	Gl. med.	Gl. min.
1. <i>Cercopithecus mona</i> ,	31·6	61·6	6·8
2. „ <i>callitrichus</i> ,	25·9	66·0	8·1
3. <i>Cynocephalus porcarius</i> ,	27·7	61·6	19·7
4. <i>Macacus nemestrinus</i> ,	28·0	60·6	11·4
5. <i>Lagothrix Humboldtii</i> ,	37·9	54·5	7·6

The PRESIDENT read the following communication from the Rev. EDWARD HINCKS:—

ON THE VARIOUS YEARS AND MONTHS IN USE AMONG THE EGYPTIANS.

THE author began by referring to his former paper on a similar subject, read before the Academy in 1838, and published in its “Transactions.” The conclusions arrived at in that paper were, he observed, vitiated by a discovery made by Brugsch, that Champollion had mistaken the seasons of the Egyptian year; that the third season, which he had believed to be that of the inundation, was in reality the genial season; and the first season, which followed this, was the true season of the inundation. Fully recognising the importance of this discovery, and of others made by Brugsch, Dr. Hincks could not acquiesce in what he had put forward as his latest discoveries—namely, that the wandering year of 365 days was unknown to the Egyptians; and that the only years used by them through the whole period of their history were the sacred year, commencing with the rising of Sothis on the 20th or 21st July of our present calendar; and the civil year, commencing about forty days after. Each of these had 365 days in three successive years, and 366 in the fourth. The principal object of the present paper was to controvert these new opinions. He admitted the existence of such a sacred year as that of M. Brugsch; which, however, was not a discovery of his, but what all Egyptologists have long since recognised; but he maintained that the Egyptians had a civil year of 365 days since 2783 B.C., and that they never had a civil year with intercalations, beginning near the end of August, until after the taking of Alexandria by Cæsar Octavianus. In support of the first proposition, he appealed first to the testimonies of various astronomical writers, and of Censorinus. In the course of his argument he noticed the mistake which Brugsch had